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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, TOMMY D	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/819,167	TULLIS, BARCLAY J.	
	Examiner	Art Unit	
	Thomas D. Lee	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,4,6,11-13,15 and 17 is/are rejected.

7)☒ Claim(s) 3,5,7-10,14,16 and 18-21 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to applicant's amendment filed February 22, 2005. Claims 1-21 are pending.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 4, 6, 11-13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,144,566 (Anderson et al.) in view of U.S. Patent 6,771,815 (Yang et al.).

Regarding claims 1, 2 and 6, Anderson et al. disclose a method of dynamically adjusting a printer, the method comprising: printing onto a medium (area of printed material scanned (column 1, lines 43-47), inherently necessitating a prior step of printing onto the material); collecting pixel values over an area of the medium (column 2, lines 31-40); calculating statistical metrics of histograms of the pixel values (column 2, line 61 – column 3, line 7); and applying metric criteria against the statistical metrics, comprising steps of determining optical density over the area and of comparing optical density to a predetermined density (column 3, lines 23-45). The printer prints with dots (ink density levels of newsprint monitored to determine the number of pixels (i.e., dots) at a particular level of ink (column 2, lines 10-13)).

Anderson et al. do not disclose adjusting print density in response to the applying step (reject signal or alarm indicates unsatisfactory ink density levels (column 4, lines 9-

19)). However, such adjustment is well known in the art. Yang et al. disclose an image correction apparatus, wherein a histogram is prepared, metrics (pixel number ratio corresponding to each gradation of histogram) are determined and compared with metric criteria (pixel number ratio determined through user specification), and the histogram gradation width is corrected (read Abstract). Correction of the histogram gradation width corresponds to adjustment of print density since gradation values with pixel number ratios less than a threshold value are compressed to a single gradation (column 6, lines 13-18). By providing a correction of gradation levels, the method disclosed in Yang et al. enables a print operation to continue even when printing conditions are not optimal, whereas the method of Anderson et al. merely signals an alarm to a user. Therefore, it would have been obvious for one of ordinary skill in the art to provide a step of adjusting gradation levels in response to a comparison of metrics with metric criteria, as disclosed in Yang et al., in the method disclosed in Anderson et al.

Regarding claim 4, Yang et al. disclose shifting and scaling of collected pixel values (shifting illustrated by comparison of Figs. 8 and 9, scaling illustrated by comparison of Figs. 9 and 10; read column 6, lines 19-65). This method, as opposed to the prior art, improves contrast in a printed image (column 1, line 66 – column 2, line 41; column 2, line 49 – column 3, line 18), and thus it would have been obvious for one of ordinary skill in the art to provide a step of shifting and scaling of collected pixel values, as disclosed in Yang et al., in the method disclosed in Anderson et al.

Claims 11, 12, 15 and 17 are apparatus claims corresponding to above-rejected method claims 1, 2, 4 and 6, respectively. The combined teaching of Anderson et al. and Yang et al. discloses or renders obvious the limitations recited in these claims, as set forth above.

Regarding claim 13, the apparatus disclosed in Anderson et al. further comprises storage for storing the collected pixel values (column 2, lines 21-22).

Allowable Subject Matter

4. Claims 3, 5, 7-10, 14, 16 and 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest the steps of "purposefully printing stealthy dots," as recited in claim 3, or "wherein the printing and the collection of pixel values are performed substantially simultaneously," as recited in claim 5, or "wherein the applied metric criterion is bimodal symmetry where median of the pixel values equals mean of the pixel values," as recited in claim 7, or "adjusting print density to a visual dark threshold determined as median of the pixel values when a single dark mode remains in the histogram," as recited in claim 9, or "wherein the metric criterion is relative height of a dark modal peak to that of a light modal peak to determine degree of adjustment of the print density," as recited in claim 10, in combination with the limitations recited in base claim 1. Claims 14, 16, 18, 20 and 21 recite similar limitations

to those recited in claims 3, 5, 7, 9 and 10, respectively. Claims 8 and 19 depend from claims 7 and 18, respectively.

Response to Arguments

6. Applicant's arguments, see page 17, lines 3-12; page 18, lines 1-9; and page 19, line 1 – page 21, line 17, of the current amendment, filed in response to the prior rejection under 35 U.S.C. §103(a), with respect to claims 3, 5, 7-10, 14, 16 and 18-21 have been fully considered and are persuasive. The prior rejection of these claims has been withdrawn.

7. Applicant's arguments filed in response to the prior rejection of claims 1, 2, 4, 6, 11-13, 15 and 17 under 35 U.S.C. §103(a) have been fully considered but they are not persuasive.

Regarding claims 1 and 11, applicant asserts that the prior Office action incorrectly concludes that the adjustment of print density is well known in the art, stating that the reliance on Anderson et al. to conclude that the adjustment of print density is well known in the art is improper (amendment, at page 15, lines 4-14). This is an incorrect interpretation of the Office action's position. Anderson et al., taken alone, does not suggest that adjustment of print density is known. However, the adjustment of gradation values, which correspond to print density values on a printed document, is well known in the art, as evidenced by Yang et al. The combination of Anderson et al. and Yang et al. would have suggested applicant's adjustment of print density, for correction of the histogram gradation width in Yang et al. corresponds to an adjustment of print density since, in Yang et al., gradation values with pixel number ratios less than

a threshold value are compressed to a single gradation (column 6, lines 13-18). When applied to Anderson et al., certain print densities will be compressed to a single density value, and thus an adjustment of print densities is realized. By providing a correction of gradation levels, the method disclosed in Yang et al. enables a print operation to continue even when printing conditions are not optimal, whereas the method of Anderson et al. merely signals an alarm to a user.

Applicant further states that Yang et al. does not involve any printing on a medium, or any adjustment of print density, and that the compression of gradation values in Yang et al. does not suggest adjustment of print density based on metric criteria (amendment, at page 15, line 15 – page 16, line 14). Printing on a print medium, as set forth in the prior Office action, is disclosed in Anderson et al., and the combination of Anderson et al. and Yang et al. would suggest such adjustment, as mentioned above.

Applicant further states that neither Anderson et al. nor Yang et al. disclose that a printer prints with dots at a particular level of ink (amendment, at page 16, line 18 – page 17, line 2). Contrary to applicant's assertion, Anderson et al. discloses printing with dots (Ink density levels of newsprint monitored to determine the number of pixels at a particular level of ink (column 2, lines 10-13). Pixels in a newsprint are dots, which had been printed prior to the monitoring.).

Applicant further states that the gradation compression of Yang et al. does not involve shifting and scaling of pixel values (amendment, at page 17, lines 13-24). Contrary to applicant's assertion, in the gradation compression of Yang et al., pixel

values are shifted, as indicated by comparison of Figs. 8 (pre-correction histogram (column 4, lines 1-3) and 9 (intermediate stage of correction (column 4, lines 4-6)), which shows a shift in the histogram of pixel values to the left). Pixel values are scaled, as indicated by comparison of Fig. 9 and Fig. 10 (post-correction histogram (column 4, lines 7-9)), where the histogram is expanded from the compressed width back to the maximum width of 256.

Applicant further states that Anderson et al. in view of Yang et al. does not teach or suggest comparing an optical density of an area of a printed medium against a predetermined density (amendment, at page 18, lines 10-19). Contrary to applicant's assertion, this limitation is disclosed in Anderson et al. (column 3, lines 23-45).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (571) 272-7436. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas D. Lee
Primary Examiner
Art Unit 2624

tdl
August 8, 2005